PTO

PATENT

INSTITUT FRANÇAIS DU PÉTROLE

THIN MULTI-STAGE CATALYTIC REACTOR WITH INTERNAL HEAT EXCHANGER, AND USE THEREOF

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ABSTRACT

An elongate reaction vessel includes at least two stages in the vertical direction in which an endothermic or exothermic catalytic reaction is carried out and comprises:

- A catalytic reaction zone (12a, 12b) per stage (6, 7);
- Introducing (2) a reaction fluid to a stage adapted for transverse motion of the fluid across the whole vertical extent of the reaction zone;
- introducing and extracting the catalyst;
- a heat exchanger (5a) for reaction fluids located inside the vessel between two successive reaction zones;
- means (6) for transporting reaction fluids from one stage to another preferably connected to the exchanger of the stage under consideration and to the inlet for reaction fluids of the subsequent stage;
- means for recovering reaction fluids downstream of the last stage.

The temperature variation in each zone and the temperature level are respectively adjusted by the thickness of each zone and by heat exchange.

Figure 1 to be published.